The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MASUHIRO NATSUHARA,
HIROHIKO NAKATA, MOTOYUKI TANAKA
and YASUHIRO MURASE

Appeal No. 2002-0182
Application No. 09/339,826

ON BRIEF

Before DELMENDO, JEFFREY T. SMITH, and PAWLIKOWSKI, Administrative Patent Judges.

PAWLIKOWSKI, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1 through 3.

Claim 1 is representative of the subject matter on appeal and is set forth below:

1. A ceramic base material comprising main constituent elements and sintering agents comprising constituent elements, the base material satisfying the following formula:

$a/b \leq 1.3$,

where a: the larger of c1 and c2,

b: the smaller of c1 and c2,

c1: the ratio "k" at a main-surface side,

c2: the ratio "k" at the other main-surface side,

$k = s/m$,

s: the fluorescent X-ray detected strength of the constituent elements of the sintering agents,

m: the fluorescent X-ray strength of the main-constituent elements.

Claims 1 through 3 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Harris '261, Chiao, Yasumoto, Sugiura, and Monma, each taken alone.

Claims 1 through 3 stand rejected under 35 U.S.C. § 102(a) or (e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Harris '377.

The examiner relies upon the following art references as evidence of unpatentability:

Yasumoto et al. (Yasumoto)	4,963,701	Oct. 16, 1990
Sugiura et al. (Sugiura)	5,165,983	Nov. 24, 1992
Harris et al. (Harris '261)	5,424,261	June 13, 1995
Chiao	5,540,884	July 30, 1996
Harris et al. (Harris '377)	5,773,377	June 30, 1998
Monma et al. (Monma)*	JP 8-157265	June 18, 1996

*(We used the English translation as provided by the examiner in the Supplemental Examiner's Answer)

On page 4 of the Brief, appellants state that the claims stand or fall together as a group. We therefore consider claim 1 in this appeal. 37CFR § 1.192(c)(7)and(8)(2000).

We have carefully reviewed appellants' Brief, Reply Brief, and Supplemental Reply Brief, and the Examiner's Answer and Supplemental Examiner's Answer. This review has led us to conclude that the examiner's rejections are well founded.

OPINION

We first start with the meaning of the term "ceramic base material" as recited in claim 1. We note that it is well settled that application claims, in proceedings before the USPTO, are to be given their broadest reasonable interpretation consistent with the specification. In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983). Page 4, lines 21-23 of the specification states that "the ceramic base material of the present invention does not exceed a 30% difference in the quantity of the sintering agent between the two main surfaces." Hence, any ceramic base material having main constituent elements and sintering agents wherein the ceramic base material

does not exceed a 30% difference in the quantity of the sintering-agent between the two main surfaces is encompassed by claim 1.

Although the specification indicates use of a setter material (see, for example, page 10 of the specification), claim 1 does not require use of a setter material. All that claim 1 requires is nothing more than a ceramic base material having main constituent elements and sintering agents, wherein the ceramic base material satisfies the formula recited in claim 1.

According to the specification, an example of a main constituent is aluminum nitride. A sintering agent can be yttrium oxide or calcium oxide. See page 7, lines 5-14 of the specification. However, the specific kinds of main constituents and sintering agents are not required in claim 1. All that is required is a ceramic base material having main constituent elements and sintering agents, wherein the ceramic base material satisfies the formula recited in claim 1.

Turning now to the art rejections, we provide the following analysis.

I. The Rejection of Claims 1-3 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a)

The examiner's basic position is that each of the references teaches high thermal conductivity AlN substrates, containing sintering aids, where any warping is controlled or held to a minimum. Thus, the reference solves the same problem addressed by appellants (see Brief, page 1). The examiner

states that appellants have not shown that the distribution of sintering aids as recited in claim 1 is distinguishable from the distribution of sintering aids set forth in each of the applied references. Answer, page 5.

Appellants argue lack of novelty on pages 5-8 of the Brief. Appellants argue unobviousness on pages 8-9 of the Brief. Appellants separately discuss each reference on pages 9-15 of the Brief. Appellants set forth additional comments in the Reply Brief and in the Supplemental Reply Brief. We have carefully considered these arguments in making our determinations herein.

Critical to the determinations made in this case is the application of applicable case law to the facts of this case. The applicable case law is set forth as follows.

We note that when an examiner relies upon a theory of inherency, "the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int. 1990). Also, the burden is on the examiner to set forth a prima facie case of obviousness or anticipation. See In re Alton, 76 F.3d 1168, 1175, 37 USPQ2d 1578, 1583 (Fed. Cir. 1996); In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

We also note that an invention directed to a new use, new function or unknown property is not patentable if prior art embodiments inherently possess the use, function, or property. See In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431

(Fed. Cir 1997); In re King, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986). The prior art need not expressly disclose these newly identified aspects of the claimed invention to anticipate it, but "may anticipate by inherency where it would be appreciated by one of ordinary skill in the art." Glaxo Inc. v Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995).

We further note that where the Patent Office has reason to believe that a functional limitation may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require appellants to prove that the subject matter shown in the prior art does not necessarily possess the characteristics relied on. In re Schreiber, 128 F.3d @ 1478, 44 USPQ2d @ 1432; See also, In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); and Ex Parte Gray, 10 USPQ2d 1922, 1925 (Bd. Pat. App. & Int. 1989). Also, once the examiner has established a prima facie case of inherency, the burden shifts to appellants to show that the prior art does not inherently possess the recited features of the claimed invention. See In re King, 801 F.2d @ 1327, 231 USPQ @ 138; In re Best, 562 F.2d @ 1254-55, 195 USPQ @ 432-33; see In re Alul, 48 F.2d 939, 175 USPQ 700 (CCPA 1972).

In the instant case, appellants argue that the examiner has improperly shifted the burden to appellants to rebut a prima facie case of anticipation or obviousness. Brief, pages 6-7. We disagree because, as pointed out by the examiner, each of the

applied references discloses a ceramic base material made of the same/similar materials. Thus, it necessarily follows that the sintering aid distribution set forth in appellants' claim 1 exists in the ceramic base materials of the applied references. We reiterate that claim 1 requires nothing more than a ceramic base material having main constituent elements and sintering agents, wherein the ceramic base material satisfies the formula recited in claim 1. Our reasons for this determination are set forth below.

a. Sugiura

Example 1 of Sugiura, for example, includes a mixture of aluminum nitride powder and yttrium oxide in the making of the disclosed sintered body. See column 4, lines 5-33. A setter is also used in Sugiura. See column 2, at lines 40 through 45. The setter material can be made of aluminum nitride (see column 4, lines 15 through 19), although we emphasize that appellants' claim 1 does not require a setter material. However, for comparison purposes, we discuss the setter material as well. Sugiura also discloses that sintering aids include oxides of rare earth elements such as yttrium oxide, oxides of aluminum, magnesium, calcium, strontium, and barium. See column 2, lines 36-39 of Sugiura.

Hence, Sugiura discloses a ceramic base material comprising the same/similar materials described in appellants' specification. We refer to Table 1 on page 18 of appellants' specification, as exemplary, which shows Sample Nos. 1 through 21, 26 and 27, which are representative of appellants'

invention. Sample No. 1 includes a mixture of aluminum nitride powder and yttrium oxide powder. A setter is also utilized in Sample Nos. 1 through 21, 26 and 27 of Table 1.

We also refer to page 10 of appellants' specification, beginning at line 2, which states that a method for preventing the uneven distribution of the sintering agents is to provide a setter between the formed bodies when they are charged into a sintering furnace. The specification discloses that the setter should be made of a permeable, high-melting-point metal or ceramic that is non-reactive with the constituents of the sintered bodies under sintering conditions and is free from softening and deformation. Sample No. 19 of Table 1 on page 18 of appellants' specification utilizes aluminum nitride powder for the setter material. Sample No. 19 also utilizes aluminum nitride, calcium oxide and D_2 and YB_2 as the sintering aids.

In view of the above comparison, we agree with the examiner that Sugiura discloses a ceramic base material having similar/same main constituent elements and sintering agents as used by appellants. The types of materials disclosed in Sugiura, as discussed above, therefore support the determination that the allegedly inherent characteristic "necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d @ 1464.

As noted, supra, once the examiner has established a prima facie case of inherency, the burden shifts to appellants to show that the prior art does not inherently possess the recited features of the claimed invention. See In re King, 801 F.2d

@ 1327, 231 USPQ @ 138; In re Best, 562 F.2d @ 1254-55, 195 USPQ @ 432-33. Here, appellants fail to provide such proof.

We therefore affirm the rejection of the claims over Sugiura.

b. Harris '261

In column 9 of Harris, Examples 3 through 22 are described. In these examples, an aluminum nitride powder was prepared into green body sheets containing sintering aids including powdered metal oxide and glassy sintering additives as described in the Table in column 9. In Examples 3 through 18, tungsten setters are utilized in the sintering furnace, while in Examples 19 through 22, molybdenum setters were utilized. Hence, Harris '261 discloses a ceramic base material having main constituents and sintering aids.

On page 18 of appellants' specification, Table 1 indicates that Sample No. 1 includes a combination of aluminum nitride powder and yttria oxide powder and utilizes as the setter material a tungsten wool.

Because the kinds of main constituents and sintering aids disclosed in Harris '261 are the same/similar to the kinds described in appellants' specification, as discussed above, we support the examiner's determination that the allegedly inherent characteristic "necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d @ 1464.

Once the examiner has established a prima facie case of inherency, the burden shifts to appellants to show that the

prior art does not inherently possess the recited features of the claimed invention. See In re King, 801 F.2d @ 1327, 231 USPQ @ 138; In re Best, 562 F.2d @ 1254-55, 195 USPQ @ 432-33. Here, appellants fail to provide such proof.

We therefore affirm the rejection of the claims over Harris '261.

c. Chiao

Chiao utilizes ceramic green sheets from aluminum nitride. To assist in sintering, sintering aids are utilized. See column 3, lines 20 through 46 of Chiao. A combination of sintering aids is set forth in column 3 at lines 49 through 61. We do not find a setter material in Chiao. However, as discussed above, claim 1 does not require a setter material, but only requires any ceramic base material having main constituent elements and sintering agents, satisfying the formula recited in claim 1.

Because the kinds of main constituents and sintering aids disclosed in Chiao are the same/similar to the kinds described in appellants' specification, as discussed above, we support the examiner's determination that the allegedly inherent characteristic "necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d @ 1464.

Once the examiner has established a prima facie case of inherency, the burden shifts to appellants to show that the prior art does not inherently possess the recited features of the claimed invention. See In re King, 801 F.2d @ 1327,

231 USPQ @ 138; In re Best, 562 F.2d @ 1254-55, 195 USPQ @ 432-33. Here, appellants fail to provide such proof.

We therefore affirm the rejection of the claims over Chiao.

d. Monma

Monma (we used the English translation provided by the examiner in the Supplemental Examiner's Answer) is directed to an aluminum nitride sintered compact. The raw materials utilized are aluminum nitride powder which can be blended with aluminum hydroxide powder. See the "MEANS" section at lines 1 through 14, including paragraph 12. The sintered compact also includes elements selected from Group IIa such as magnesium, calcium, strontium, and barium, and yttrium, and rare earth metals. See paragraph 20 of the "MEANS" section. The aluminum nitride solid is laminated with a boron-nitride substrate, a setter material. See paragraph 26 of the "MEANS" section of Monma.

Because the kinds of main constituents and sintering aids disclosed in Monma are the same/similar to the kinds described in appellants' specification, as discussed above, we support the examiner's determination that the allegedly inherent characteristic "necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d @ 1464.

Once the examiner has established a prima facie case of inherency, the burden shifts to appellants to show that the prior art does not inherently possess the recited features of

the claimed invention. See In re King, 801 F.2d @ 1327, 231 USPQ @ 138; In re Best, 562 F.2d @ 1254-55, 195 USPQ @ 432-33. Here, appellants fail to provide such proof.

We therefore affirm the rejection of the claims over Monma.

e. Yasumoto

Yasumoto teaches ceramic base materials made of AlN as a main constituent and sinter agents such as Y. See column 3, lines 35-50.

Because the kinds of main constituents and sintering aids disclosed in Yasumoto are the same/similar to the kinds described in appellants' specification, as discussed above, we support the examiner's determination that the allegedly inherent characteristic "necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d @ 1464.

Once the examiner has established a prima facie case of inherency, the burden shifts to appellants to show that the prior art does not inherently possess the recited features of the claimed invention. See In re King, 801 F.2d @ 1327, 231 USPQ @ 138; In re Best, 562 F.2d @ 1254-55, 195 USPQ @ 432-33. Here, appellants fail to provide such proof.

We therefore affirm the rejection of the claims over Yasumoto.

II. The Rejection of Claims 1 through 3 under 35 U.S.C. § 102(a) or (e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Harris '377

Harris '377 is directed to the formation of polycrystalline aluminum nitride sintered bodies. The sintering aid utilized for formation of the aluminum nitride sintered bodies comprises at least two components, at least one metal compound of Group IIa, preferably calcium, and at least one metal compound of Group IIIa or the rare earths (lanthanides), preferably yttrium. See column 8, lines 62 through 68, and column 9, lines 1 through 7. The aluminum oxide powder, binder and sintering aid package powders are mixed and are formed into green bodies by conventional procedures. To form multi-layer ceramic bodies, sheets of aluminum nitride green bodies are printed with a metal paste, such as metal paste derived from the refractory metals molybdenum and tungsten. See column 14, lines 26 through 33. The printed green sheets are laminated together under heat and pressure prior to sintering to form a structure having multiple alternating layers of metal and ceramic.

Because the kinds of main constituents and sintering aids disclosed in Harris '377 are the same/similar to the kinds described in appellants' specification, as discussed above, we support the examiner's determination that the allegedly inherent characteristic "necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d @ 1464.

Once the examiner has established a prima facie case of inherency, the burden shifts to appellants to show that the

prior art does not inherently possess the recited features of the claimed invention. See In re King, 801 F.2d @ 1327, 231 USPQ @ 138; In re Best, 562 F.2d @ 1254-55, 195 USPQ @ 432-33. Here, appellants fail to provide such proof.

We therefore affirm the rejection of the claims over Harris '377.

III. Additional Comments

We carefully reviewed all of appellants' arguments regarding each of the applied references. We refer to our determinations made above in response thereto. As discussed above, each of these references satisfies the subject matter of claim 1 as interpreted by the examiner and as explained on pages 3-4 of this decision.

We also note that the burden on appellants to show that the prior art does not inherently possess the recited features of the claimed invention is best satisfied by providing objective evidence. The Brief, the Reply Brief, and the Supplemental Reply Brief do not identify any objective evidence that would support the appellants' position on these references. On this point, it is well settled that naked attorney arguments are insufficient to rebut the prima facie case. In re Geisler, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365; In re De Blauwe, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1994); In re Lindner, 457 F.2d 506, 508-09, 173 USPQ 356, 358 (CCPA 1972).

We note that appellants do refer to Table 2 on page 20 of the specification as showing that sintering agents impact

warpage. On page 5 of the answer, the examiner states that this showing does not represent the applied art. We agree. As discussed supra, appellants' burden is to show that the prior art does not inherently possess the recited features of the claimed invention. See In re King; In re Best, supra.

IV. Conclusion

We affirm each of the rejections.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

ROMULO H. DELMENDO)
Administrative Patent Judge)
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JEFFREY T. SMITH) BOARD OF PATENT
Administrative Patent Judge) APPEALS
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Appeal No. 2002-0182
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